1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--FREE SUBUNITS OF RNA POLYMERASE IN NORMAL AND PHAGE INFECTED CELLS OF E. COLI -U-

AUTHOR-(04)-BOGDANOVA, YE.S., ZOGRAF, YU.N., BASS, I.A., SHEMYAKIN, M.F.

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 3, PP 435-444

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ESCHERICHIA COLI, PHAGE, RNA, ENZYME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0386 STEP NO--UR/0463/70/004/003/0435/0444

CIRC ACCESSION NO--AP0122567

UNCLASSIFIED

2/2 015 UNCLASSIFIED

CIRC ACCESSION NO--AP0122567 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDITION OF SUPERNATANTS OBTAINED AFTER ULTRACENTRIFUGATION (5.5 HOURS; 300,000 G) OF THE NONINFECTED CELLS LYSATES OF E. COLI (STRAINS B, 3.0S0, TS 19) RESULTS IN A SHARP INCREASE OF ACTIVITY OF THE HEATED E. COLI RNA POLYMERASE. THIS ACTIVATION IS CONNECTED WITH SMALL PARTICLES (SIMILAR TO 3-5S) AND IS ELIMINATED BY ANTIBODIES AGAINST PURIFIED E. COLI RNA POLYMERASE. THE INCREASE OF ACTIVITY OF THE HEATED ENZYME IS, THEREFORE, DUE TO THE PRESENCE OF THE SMALL COMPONENT OF POLYMERASE IN THE ULTRACENTRIFUGATES THAT MAKES POSSIBLE THE RECONSTRUCTION OF THE ENZYME FROM THE SMALL AND THE LARGE SUBUNITS. THE ULTRACENTRIFUGATE OF E. COLI B CELLS INFECTED WITH THE PHAGE T2 OR T4 OR WITH AN AMBER MUTANT N122 OF PHAGE T4, AS A RULE, DOES NOT ACTIVATE THE HEATED ENZYME. MOREOVER, IT SIGNIFICALLY INHIBITS THE RNA SYNTHESIS CATALYZED BY THE MIXTURE OF THE HEATED ENZYME AND THE ULTRACENTRIFUGATE FROM NONINFECTED CELLS, BUT DOES NOT AFFECT THE ACTIVITY OF THE NATIVE RNA POLYMERASE. INHIBITION IS NOT OBSERVED IN THE CASE WHEN THE RECONSTRUCTED ENZYME HAS ALREADY BEGUN TO SYNTHESIZE RNA BEFORE THE ADDITION OF THE ULTRACENTRIFUGATE FROM INFECTED BACTERIA. THE DATA OBTAINED MAKE IT POSSIBLE TO CONCLUDE THAT THE LYSATES OF THE INFECTED CELLS CONTAIN INHIBITOR WHICH SPECIFICALLY PREVENTS RECONSTRUCTION OF ACTIVE RNA POLYMERASE FROM ITS LARGE AND SMALL SUBUNITS. THE SUM OF RESULTS INDICATES THAT A MECHANISM OF REGULATION OF RNA POLYMERASE ACTIVITY MAY EXIST IN THE CELL, THAT ACTS ON THE LEVEL OF ASSOCIATION OF THE LARGE AND SMALL SUBUNITS OF THIS ENZYME. FACILITY: INSTITUTE OF ATOMIC ENERGY, USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 539.67

TAVADZE, F. N., ZOIDZE, N. A., BADZOSHVILI, V. I., METREVELI, V. SH., and GARIBASHVILI, V. I.

"The Effect of Boron on the Internal Friction and Mechanical Properties of CONGVR Steel"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 132-134

Abstract: It is shown that the addition of boron to OONGVR steel leads to an increase in strength, and reinforces the effect of heat treatment on "heredity." In samples containing boron, a preliminary deformation at room temperature increases the strength and yield stress after the $\alpha-\gamma-\alpha$ transformations.

It is assumed that an increase in mechanical properties is related to the effect of boron on the formation of steel substructure. Certain recommendations are given on the practical use of boron for strengthening the effect of heat treatment on the "heredity" of alloyed steels. 2 figures.

1/1

1/3 029 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--INTERNAL FRICTION OF IRON BORON ALLOYS -U-

AUTHOR-(05)-METREVELI, Y.SH., TSAGAREYSHVILI, G.V., MIKELADZE, A.G., ZOIDZE, N.A., DARSAVELIDZE, G.SH.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (1) 21-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--INTERNAL FRICTION, IRON ALLOY, BORON ALLOY, ACTIVATION ENERGY, THERMAL EFFECT, TEST METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/1264 STEP NO--UR/0129/70/000/001/0021/0024

CIRC ACCESSION NO--AP0049427

UNCLASSIFIED

2/3 029 UNCLASSIFIED

CIRC ACCESSION NO--AP0049427 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTERNAL FRICTION WAS INVESTIGATED OF PURE FE, CRYST. B, AND FE-B ALLOYS AFTER VARIOUS THERMAL TREATMENTS. INTERNAL FRICTION WAS MEASURED ON WIRE SPECIMENS (0.75-0.8 MM IN DIAM. AND 100 MM LENGTH) WITH DIRECT AND INVERSE TORSION PENDULUM IN A PERMANENT MAGNETIC FIELD OF 300 OE AT TEMPS. MINUS 190-600DEGREES IN AN INERT ATM., OR AT 10 PRIME NEGATIVE4 TORR. INTERNAL FRICTION OF ANNEALED FE (300 HR AT 700DEGREES IN WET H) DEPENDS LITTLE ON TEMP. AT MINUS 190-70DEGREES. ONE PEAK AT MINUS 75DEGREES WAS OBSD. TWO WEEKS HOLDING AT ROOM TEMP. DID NOT EFFECT THE HEIGHT OF THE PEAK. THE PEAK IS REMOVED BY HEATING TO 150DEGREES. WHEN FREQUENCY IS INCREASED 1-3.5 HZ, THE PEAK SHIFTS SIMILAR TO 12DEGREES. FROM THE PEAK SHIFT THE ACTIVATION ENERGY WAS DETD. AS 6.4KCAL-MOLE. DURING INVESTIGATION OF TEMP. DEPENDENCE OF INTERNAL FRICTION OF B, A PEAK AT 260DEGREES WAS REVEALED. ACTIVATION ENERGY DETD. FROM TEMP. SHIFT WAS 20 PLUS OR MINUS 2KCAL-MOLE. IN FE SPECIMENS CONTG. 0.004-0.016PERCENT B THE PEAK OF INTERNAL FRICTION WAS AT 40DEGREES. DEPENDENCE OF INTERNAL FRICTION ON B CONTENT IN FE-B ALLOYS WITH GRAIN SIZE 70-100 AND 10-20MU IS GIVEN. TEMP. DEPENDENCE OF INTERNAL FRICTION OF A SPECIMEN CONTG. 0.2PERCENT B IS GIVEN.

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3/3 029 UNCLASSIFIED

CIRC ACCESSION NO--AP0049427 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--ON A SPECIMEN QUENCHED FROM 720DEGREES 2 PEAKS WERE OBSD.: ONE AT 40DEGREES, AND THE OTHER AT 340DEGREES. AFTER ANNEALING AT 500DEGREES, THE LOW TEMP. PEAK DISAPPEARED, THE HEIGHT OF THE HIGH TEMP. PEAK REMAINED UNCHANGED. TEMP. DEPENDENCE OF INTERNAL FRICTION OF THE SAME SPECIMEN BUT STRAINED TO 10-15PERCENT DEFORMATION AND ANNEALED AT 500DEGREES REVEALED A PEAK AT 240DEGREES, THE PEAK AT 340DEGREES WAS INCREASED. THE ORIGIN OF 40DEGREES PEAK IS ASSOCD. WITH MIGRATION OF INTERSTITIAL B ATOMS UNDER STRAIN. B DISSOLVES IN ALPHA FE AND GIVES MAX. OF INTERNAL FRICTION AT 40DEGREES. THIS MAX. IS INCREASED WHEN B CONTENT IN FE IS INCREASED; BUT DECREASES WHEN THE BORIDES APPEAR IN THE STRUCTURE. IT SEEMS THAT BORIDES ENHANCE PPTN. OF B ATOMS FROM SOLID SOLN. THE PEAK AT 240DEGREES CAN BE EXPLAINED BY INTERACTION OF DISLOCATIONS WITH B ATOMS; THE MAX. INTERNAL FRICTION AT 340DEGREES IS RELATED TO OCCURRENCE OF BORIDES.

UNCLASSIFIED

UDC 547.241

USSR

ZHURAVLEVA, L. P., SULEYMANOVA, M. G., MARCHENKO, A. P., Z'OLA, M. I., KOVALYUKH, N. N., and KIRSANOV, A. V., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Hydrogenation of Organophosphorus Compounds. Part V"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1944-1950

Abstract: This paper is one of a series of investigations on the hydrogenation of organophosphorus compounds containing aromatic radicals. It is shown that mixed oxides of tertiary phosphines, phosphinic and phosphonic acids as well as phosphoric acid amides with phenyl and benzyl radicals will be hydrogenated in the presence of a platinum catalyst to form corresponding compounds with cyclohexyl and cyclohexylmethyl radicals; the phosphoric acid amides will be hydrogenated at a higher rate (at room temperature) than oxides and acids. Unlike the initial compounds, all hydrogenated products featured lower melting points and higher solubilities in ordinary organic solvents. When treated with phosphorus pentachloride, bis(cyclohexylmethyl) phosphinic acids form their acid chlorides -- readily mobile liquids, distillable under vacuum. When treated with propylmagnesium iodide, bis(cyclohexylmethyl)phosphinic acids form an oxide of propylbis(cyclohexylmethyl)phosphine which is identical to the hydrogenation product of

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ZHURAVLEVA, L. P., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1944-1950

propyldibenzylphosphine oxide. The experimental section of this paper is presented in great detail and includes tables citing yields, melting points, solvents for crystallization, formulas, solubilities and other indicators for phosphoric acid trialylamides $(RNH)_3PO$, phosphoric acid tris(cyclohexyl)amides $(RNH)_3PO^a$ and other related compounds.

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USSR UDC 546.183

ZHURAVLEVA, L. P., and Z'OLA, M. I.

"On the Mechanism of Phosphorus Diiodide Alkylation with Benzyl Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 526-531

Abstract: The release of phosphorus trichloride when benzyl chloride reacts with phosphorus diiodide indicates that benzyl chloride splits the P-P bond of phosphorus diiodide to form benzyldiiodophosphine and phosphorus diiodomonochloride (1) which undergoes disproportionation into phosphorus trichloride and triiodide (2). The benzyldiiodophosphine formed in the first stage is then alkylated by benzyl chloride to dibenzylmonochlorodiodophosphorus (3), and then to tribenzylphosphine dichloride diiodide (4). This reaction scheme explains the formation of benzylphosphonic and dibenzylphosphinic acids which could be formed during hydrolysis of intermediate products of alkylation. Since it has been proved previously that phosphorus triiodide is converted to phosphorus diiodide with the application of heat (5), and that red phosphorus also forms phosphorus diiodide with iodine (6), it may be assumed that the reaction of benzyl chloride with phosphorus and iodine goes through the following stages:

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ZHURAVLEVA, L. P., and Z'OLA, M. I., Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 526-531

(1) $I_2P-PI_2 + BzCl \longrightarrow BzPI_2 + PClI_2$
(2) $3PClI_2 \longrightarrow PCl_3 + 2PI_3$
(3) $BzPI_2 + BzCl \longrightarrow Bz_2PClI_2$
(4) $Bz_2PClI_2 + BzCl \longrightarrow Bz_3PCl_2I_2$
(5) $2PI_3 \longrightarrow P_2I_4 + I_2$
(6) $2I_2 + 2P \longrightarrow P_2I_4$

The resultant equation for the reaction thus becomes

$$4P + 6I + 9BzCl \longrightarrow 3Bz_3PCl_2I_2 + PCl_3.$$

The proposed scheme is verified experimentally. It is further confirmed by data in the literature on the chemical properties of the intermediate compounds.

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UDC 547.24'

ZIOLA, M. I., ZHURAVLEVA, L. P., KIRSANOV, A. V.

"Reactions of Tertiary Phosphine Oxides With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1937-1942

Abstract: Reaction of stoichiometric amounts or of a double excess of phosphorus pentachloride with trisarylmethylphosphines in benzene or carbon tetrachloride solution yields only trisarylmethylphosphine dichlorides without any hexachlorophosphorates. Phosphorus pentachloride reacts with triscyclohexylmethylphosphine yielding the corresponding dichloride and hexachlorophosphorate of triscyclohexylmethylphosphonium chloride, which forms a crystal solvate with carbon tetrachloride. The dichlorides obtained can be converted to thiooxides by treatment with hydrogen sulfide and to the corresponding phosphazo compounds by the reaction with sulfoacid-N-dichloroamides. Thermal decomposition of tribenzylphosphine dichloride yields dibenzylchlorophosphine, which gives addition products with alkyl halides. These addition products can be hydrolyzed 1/1 to the alkyldibenzylphosphine oxides.

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1/2 028 UNCLASSIFIED

TITLE--ATOMIC MISSILE SUBMARINES -U- PROCESSING DATE--18SEP70

AUTHOR--ZOLIN, I.

COUNTRY OF INFO--USSR

SOURCE--PRAVDA, APRIL 29, 1970, P 6, COLS 72-7

DATE PUBLISHED--29APR70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MILITARY SCIENCES, AERONAUTICS, MISSILE TECHNOLOGY

TOPIC TAGS--ATTACK AIRCRAFT, NUCLEAR SUBMARINE, MISSILE SUBMARINE, AIR TO AIR REFUELING/(U)RAKETA HYDROFOIL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/0068 STEP NO--UR/9012/70/000/000/0006/0006

CIRC ACCESSION NO--AN0100627

UNCLASSIFIED

2/2 028 UNCLASSIFIED

CIRC ACCESSION NO--AN0100627 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COORDINATED "ATTACKS" BY JET AIRCRAFT AND ATOMIC MISSILE SUBS ARE TAKING PLACE. ATOMIC SUBS ARE EQUIPPED WITH ROCKETS AND SELF HOMING TORPEDOES. IN FLIGHT REFUELING OVER THE OCEAN OF LAND BASED JET AIRCRAFT IS MENTIONED. A PHOTOGRAPH OF "METEOR" AND "RAKETA" HYDROFOILS BEING LAUNCHED AT LENINGRAD AFTER WINTER STORAGE ON LAND IS INCLUDED.

UNCLASSIFIED

USSR

UDC: 533.9...15

ZOLKIN, A. S.

"Determining the Minimum of a Space Charge Potential"

Novosibirsk, Aerofiz. issledovaniya--sbornik (Aerophysical Research--collection of works), 1972, pp 78-81 (from RZh-Fizika, No 6, Jun 73, abstract No 6G132 by V. Ch.)

Translation: Experiments on the interaction of a beam with a plasma are briefly described. The experiments were done in connection with development of an ionizer for measuring the distribution function of a molecular beam. A diagram of the experimental setup is presented (ionizer, electron beam, and screen for registration of the electron beam). The depth of the potential well inside the ionizer was determined from the deflection of the probing electron beam passing through the ionizer plasma. It is stated that determination of the potential minimum is extremely sensitive to the beam parameters, the geometry of the system, and the residual gas pressure. The minimum depth of the potential well is 0.1 ev, plasma filament length is 3 cm, beam diameter is 1 cm, energy 100 ev, current 7 ma, and pressure $3 \cdot 10^{-5}$ mm HG.

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USSR

UDC 629.78.002.3

BOYARENTSEV, V. N., ZOLKIN, P. I.

"Erosive Wear of Carbon-Graphite Materials"

Construkts. Materialy Na Osnove Grofita. [Structural Materials Based on Graphite -- Collection of Works], No 6, Moscow, Metallurgiya Press, 1971, pp 89-95. (Translated from Referativnyy Zhurnal Raketostroyeniye, No 1, 1972, Abstract No 1.41.200 from the resume).

Translation: The formulas showing the dependence of wear rate of the mass of common-graphite materials on temperature, pressure, density and chemical composition of the flow in the process of chemical interaction of these materials with a gas flow allow the diffusion or kinetic nature of the process to be determined, as well as the value of the preexponential factor in the Arrhenius expression for the rate of the surface chemical reaction K_o and activation energy E. An electric heating installation was used to test specimens of graphite types VPP, GRM, as well as PG material in the 1700-2600°K temperature range with a carbon dioxide gas flow speed of 5 m/sec, and air flow speed of 8 m/sec, excess pressure in the chamber 1 and 4 bar. 3 figs; 2 tables; 6 biblio refs.

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USSR UDC 621.3.035.2

PEREVEZENTSEV, V. P., ZOLKIN, P. I., PISKUNOV, V. A., and BEREZIN, I. A.

"Construction Graphites With a Metallic Bond"

Moscow, Tsvetnyye Metally, No 10, Oct 70, pp 45-46

Abstract: Three new experimental construction graphites, V-2S, V-2, and LG-1, were produced recently by thermomechanical processing of a mixture consisting of coke and additions of carbide forming metals such as silicon and zirconium. The metallic additions, which serve as a bond, at the same time substantially affect the quality (heat and electric conductivity, strength) of the graphite obtained. The process is accomplished in a single 3-hour operation. The size of the billets depends on the electric and mechanical power of the press and also on the mold strength. The basic physico-mechanical properties of the graphites are presented in a table.

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Acc. Nr. AP0041405 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code UK 0000

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71799q Structure of the product from reaction of an equimolar mixture of 1- and 2-bromomethylnaphthalenes with enneacarbonyldiiron. A new π-complex with a trimethylenemethane-type ligand. Nesmeyanov, A. N.; Astakhova, I. S.; Zol'nikova, G. P.; Kritskaya, I. I.; Struchkov, Yu. T. (Inst. Org.-Elem. Comp., Moscow, USSR). *J. Chem. Soc. D* 1970, (2), 85 (Eng). X-ray diffraction study shows that the reaction product of an equimol. mixt. of 1- and 2-bromomethylnaphthalenes with $Fe(CO)_3$ is a π-complex with a trimethylenemethane ligand, which constitutes a part of the 2-naphthylmethyl group, the latter being alkylated in the 4-position of its coordinated benzene ring by the 1-naphthylmethyl radical, which does not participate in coordination with the Fe. The complex is monoclinic with space group $P2_1/c$ with cell dimensions a 8.36, b 17.03, c 13.73 Å, β 95°, d. 1.40, and $Z = 4$. DSJN

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REEL/FRAME
19751270

USSR

UDC 547.913.2:668.5

PANOZISHVILI, K., ZOL'NIKOVA, N. V., and BOROVKOV, A. V., All Union Scientific Research Institute of Agricultural Microbiology

"Verrukarin A from Dendrodochium Toxicum"

Tashkent, Khimiya, Prirodnykh Soyedineniy, No. 2, 1972, pp 245

Abstract: Using the activated charcoal adsorption method a toxic fraction was isolated from the Dendrodochium toxicum culture. A compound was isolated from the toxic fraction by Al_2O_3 column chromatography with melting point >330° C. On the basis of its physico-chemical properties, IR and UV data it was identified as verrukarin A.

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1/2 020 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--WEAR RESISTANT GRINDING COMPONENTS OF CENTER RUN COAL GRINDING MILLS -U-

AUTHOR-(05)-TSYPIN, I.U., TRUBITSYN, N.A., KRYUCHKOV, P.P., TIMOFEYEV, V.L., ZOLOCHEVSKIY, G.L.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, 2, 11-13

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--COAL, GRINDING MACHINE, WEAR RESISTANT FERROUS METAL, ALLOY DESIGNATION, HARD ALLOY, CAST IRON, ALLOY COMPOSITION, CHROMIUM CONTAINING ALLOY, MANGANESE CONTAINING ALLOY, MOLYBDENUM CONTAINING ALLOY/(U)NIHARD CAST IRON, (U)300KH13G3M CHROMIUM MANGANESE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1578 STEP NO--UR/0128/70/002/000/0011/0013

CIRC ACCESSION NO--AP0116827

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0116827

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING CAST IRONS WERE TESTED: NIKHARD, 300KH13G3M, AND CHILLED IRON WITH GLOBULAR GRAPHITE. THE BEST WEAR RESISTANCE WAS SHOWN BY THE NIKHARD AND 300KH13G3M; CHEM. COMPNS. OF THESE ALLOYS AS USED EXPTLY. AT 4 INDUSTRIAL COAL GRINDING MILLS ARE GIVEN AS FOLLOWS: (SHOWN ON MICROFICHE). THE WEAR RESISTANCE AFTER 3500 HR OF WORK OF 300KH13G3M WAS A FACTOR OF 1.6 HIGHER THAN THAT OF THE NIKHARD CAST IRON. A DECARBURIZED LAYER ON THE SURFACE OF 300KH13G3M (DUE TO AIR HARDENING) INITIALLY DECREASED THE WEAR RESISTANCE.

UNCLASSIFIED

USSR

UDC: 536.46:533.6

ZOLOTAR', E.A. and OZEROV, E.S.

"On Calculation of Ignition and Combustion of Boron Particles"

Odessa, 11-ya Vses. Conf. po Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972 (11-th All-Union Conference on Problems of Evaporation, Combustion and Gas Dynamics of Dispersion Systems, 1972), 1972, pp 27-28 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B 962)

Translation: The problem is solved on preheating and ignition of boron particles suddenly introduced into an oxidizing gas medium. It is assumed that the particle is not oxidized prior to reaching the melting temperature, and after melting of the oxide the particle is oxidized with a speed depending on the diffusion resistance of the oxide film. The equation of oxide mass balance takes into account its evaporation; the speed of evaporation is calculated on the assumptions of quasistationary transfer of process to the reduced film, phase equilibrium of oxide on the surface of the particle and absence of oxide vapor in the surrounding medium. The particle is considered to be ignited if there

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ZOLOTAR', E. A. and OZEROV, E. S., 11-ya Vses. Conf. po Vopr. Isparenlya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972

is a maximum on the curve of film thickness versus time with increasing temperature of the particle, it is considered to be not ignited if there is a maximum on the curve of particle temperature versus time with increasing film thickness. The design limit of ignition temperature decreases with the increase of particle size and of oxidizer concentration, but this decrease is smaller than the one obtained from experimental data. The curve of ignition limit versus diffusion coefficient has a maximum.

Another calculation method does not take into account the diffusion resistance of the oxide film and assumes the speed of reaction to depend on oxigen content in the medium.

Such an oxidizing regime occurs if the experimental limit of ignition temperature exceeds the boiling temperature of the oxide. From these experimental points the Arrenius constants can be determined using Semenov conditions. At last the effects of the Kinetic and diffusion resistances to oxidation are compared using the estimated values of Arrenius constants in the

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USSR

ZOLOTAR', E. A. and OZEROV, E. S., 11-ya Vses. Conf. po Vopr. Isspareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972

expression of speed of oxidation of the metal on the boundary between metal and oxide in the presence of diffusion resistance of the oxide film. It is shown that, in the absence of resistance on the ignition limit of a flying particle, the design temperature of the medium at the ignition instant is the lower the more the temperature of the medium decreases with time.

USSR

UDC: 662.58

ZOLOTAR', YE. A., and OZEROV, YE. S., Leningrad

"Calculating the Inflammability Limit of a Boron Particle"

Novosibirsk, Fizika Goreniya i Vzryva, Vol 9, No 4, Jul-Aug 73, pp 515-521

Abstract: The authors calculate the inflammability limit of a boron particle. Limiting cases of purely kinetic and purely diffusion oxidation regimes are considered. It is shown that the calculated limits exceed the experimental if the temperature of the medium is not considered. It is necessary to take into consideration temperature variability in calculating the characteristics of particle inflammability. This computational complication can be avoided in those cases where the fall in temperature along the flux is less than the confidence interval for the test measurement of the local temperature.

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USSR UDC 546.791.4

KASHCHEYEV, I. N., and ZOLOTAREV, A. B.

"Reaction of Uranium With a Mixture of Lithium and Calcium Fluorides"

Leningrad, Radiokhimiya, Vol 15, No 6, 1973, pp 823-826

Abstract: It was established that under non-equilibrium conditions uranium can interact with molten alkali metal fluorides forming nonvolatile uranium fluoride and liberating alkali metals. In this process two layers are formed in the LiF-CaF_2 mixture: the lower layer containing considerable amount of uranium and the upper one with a low concentration of this metal. The investigation of the changes in concentration of uranium under such conditions, and their relative content with time showed that the limiting stage of this process is the diffusion of the reaction components towards the phase separation surface.

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USSR

ZOLOTAREV, A. Ye.

"Some Problems of Invariant Analysis of Images"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], 1972, No 25, pp 20-31 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V708, by the author).

Translation: This work contains the results of numerical analysis of certain invariant algorithms for processing of images. The first part studies invariant algorithms similar to the detectors of the second type in the visual system of the frog (spot detectors). The properties of these detectors are of significant interest in connection with the problems of detection, recognition, etc. A simple problem of formation of a complex decision rule on the basis of "elementary" decision rules -- detectors of "elementary characteristics" -- is studied. The second portion studies an invariant algorithm for processing of numbers. The results of calculation of the invariant descriptions of numbers by digital computers show the good differentiability of the numbers.

USSR

ZOLOTAREV, A. Ye., PYT'YEV, Yu. P.

"Invariant Grids and Decision Rules for Invariant Recognition Problems"

Tr. Mosk. In-ta Elektron. Mashinostr. [Works of Moscow Institute of Electronic Machine Building], 1972, No 25, pp 3-19 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V707, by the authors).

Translation: Simple selective properties of invariant grids are studied and simple theorems are proven, characterizing the resolving capacity of the grids. In the case of groups of translations and Euclidean motions, the results produced are illustrated with analytic and numerical studies. In conclusion, results are presented which characterize the properties of heterogeneous invariant grids.

USSR UDC 621.371.029.55

VSEKHOSVYATSKAYA, I. S., GLADYSHEVA, M. V., GORSHKOVA, E. Z., DUMBRAVA, Z. F., YEROFEYEV, N. M., ZOLOTAREV, A. Ye., KIYANOVSKIY, M. P., MAL'SHAKOV, V. N., NOVIKOVA, L. N., PEZHEMSKAYA, M. D., PODDEL'SKIY, N. P., and RUDYKA, L. V.

"Some Results of Investigations Into Tilted Short-Pulse Sounding in Ranges up to 400 km Long"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 1 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972, pp 347-348 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A333)

Translation: Results are given of the selection of optimal operating frequencies for ranges of varying extent, the identification of propaganda modes, and the determination of the spectral characteristics of the fluctuations in signal level. A. L.

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USSR UDC 621.791.01:092:539.56:620.178.2

ZOLOTAREV, B. B., Candidate of Technical Sciences

"Embrittlement of Point Joints Made by Resistance Welding"

Moscow, Svarochnoye Proizvodstvo, No 10, Oct 70, pp 7-10

Abstract: Problems of embrittlement of point joints made by contact welding in steels and titanium alloys are studied. Point joints were tested in types VNS2, Kh18N9T, and 20 steels and in VT1-1, OT4, VT14, VT20, and VT22 titanium alloys (thicknesses 0.6 to 2.0 mm). It is concluded that deformation aging, causing embrittlement of the metal, is one of the primary factors in the changing mechanical properties of point joints after heating. Depending on metal type, joint brittleness can be prevented by using special heat treatment of the structure, by electrical heat treatment of the point joint between the electrodes of the welding machine, or by alloying the fused core. These approaches, although they improve the properties of the point joints under static loads, generally decrease their fatigue strength.

1/1

USSR

UDC 612.822.087

ZOLOTAREV, F. YA., Laboratory of Physiology, Institute of Expertise, Working Ability and Labor Organization for Invalids, Leningrad

"Some Physiological Mechanisms for Fluctuations in Human Alpha-Rhythm Frequency in a State of Relative Rest"

Leningrad, Fiziologicheskiy Zhurnal SSR imeni I. M. Sechenov, Vol 59, No 8, Aug 73, pp 1145-1150

Abstract: The frequency fluctuations of isolated alpha rhythms relative to their average level were studied in 10 healthy subjects and 36 subjects with various lesions of the central nervous system, under conditions of relative rest. The alpha rhythm amplitude and frequency changes were correlated with wave front duration. Using periodometric analysis to calculate a coefficient of period constancy a tendency toward an increase in the level of frequency changes among the groups with organic symptoms, in comparison to healthy people, was demonstrated, irrespective of the localization of the lesion. Comparison of patients with cerebral or spinal lesions as to the primary expression of a depression or stimulation allowed a correlation between frequency changes and increase in formation input volume. It is suggested that these fluctuations reflect the rate of reorganization of functional links in the cerebral cortex.

1/1

Circuit Theory

USSR UDC: 621.391.81:519.272

ZOLOTAREV, I. D., VORONKOV, B. N.

"Evaluation of the Effect of Transient Processes on the Autocorrelation Function of Multidimensional Wide-Band Signals"

V sb. Radiofiz. i mikroelektronika (Radio Physics and Microelectronics--collection of works), Voronezh, 1970, pp 7-8 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A56)

Translation: The authors consider distortion of the autocorrelation function of multidimensional wide-band signals under the influence of transient processes in an optimum processing channel. Distortions in all elements are taken into consideration -- in the part of the channel preceding the compression circuit, in the compression circuit, and in the optimum filter. The greatest danger is presented by the first section, where the addition of distortions takes place. One illustration, bibliography of two titles. N. S.

1/1

USSR UDC: 621.391.81

ZOLOTAREV, I. D., VORONKOV, B. N.

"Passage of a Phase-Keyed Signal Through a Transistorized Resonance Amplifier"

V sb. Radiofiz. i mikroelektronika (Radio Physics and Microelectronics--collection of works), Voronezh, 1970, pp 9-12 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A82)

Translation: To evaluate the effect of transient process on intersymbol distortions and distortions of the autocorrelation function in the case of optimum processing of a phase-keyed signal, the authors determine the response of a transistorized resonance amplifier to a complex phase-keyed signal as a whole. Expressions are derived which describe phase and amplitude variations of the output signal in time. One illustration, bibliography of seven titles. N. S.

1/1

UDC: 621.317.757

USSR

BRYUKHANOV, Yu. A., ZOLOTAREV, I. D.

"Investigation of the Errors of an Automatic Spectrum Analyzer of the Recirculation Type Introduced by the Frequency Shift Circuit"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 133-138 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A395)

Translation: The frequency shift circuit is a single-band modulator made by the phase compensation method. Because of the deviation of the phase shifter and mixers from ideal, and scatter of the transmission ratio of the channels, there are oscillations with undesirable frequencies at the modulator output (the carrier frequency and another sideband) which impair the parameters of the spectrum analyzer. Mathematical expressions are given for signal distortions, etc. together with curves for error, for metrological characteristics and so forth. It is pointed out that the requirements for precision in making the elements of the displacement circuit are determined chiefly by the permissible measurement error in determining the amplitudes of the spectral components. Three illustrations. E. L.

1/1

USSR UDC: 621.317.757

BRYUKHANOV, Yu. A., ZOLOTAREV, I. D.

"Effect of Parasitic Delay Line Signals on the Metrological Characteristics of an Automatic Spectrum Analyzer of the Recirculation Type"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 131-132 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A391)

Translation: It is pointed out that the principal source of parasitic signals of a delay line of the tape-recorder type is frequency modulation which arises as a consequence of variations in the velocity of the head-tape couple. An expression is presented and analyzed for the instantaneous frequency of the playback signal. Displacement of the response pulse maximum is a result of the effect of parasitic frequency modulation. A curve is given for the relative displacement of the maximum as a function of the index of parasitic frequency modulation. This displacement causes a systematic error in frequency measurement which may be compensated by changing the time of starting the indicator sweep when the pilot signal is sent to the analyzer input. One illustration, bibliography of one title. E. L.

1/1

USSR UDC: 621.396.6:621.315.61(088.8)

PROKOPOVA, T. V., ZOLOTAREV, L. L., ZAVARZINA, Z. Ya., GLOBA, G. G., PEYKAROVA, A. A., SUND'YA, G. A.

"A Photosensitive Electrical Insulating Lacquer"

USSR Author's Certificate No 270940, filed 15 Dec 67, published 18 Aug 70 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2V506)

Translation: This Author's Certificate introduces an electrical insulating photosensitive lacquer based on epoxidized rubber stock with the addition of thermo- and photopolymerization initiators, a plasticizer and a modifier.

1/1

Adsorption

USSR UDC 541.183

ZOLOTAREV, P. P., Institute of Physical Chemistry, Academy of Sciences USSS

"Effect of Random Variations of the Substrate Concentration in a Stream on the Kinetics of Adsorption by Absorbent Particles"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, 1, Jan 73, pp 116-119

Abstract: A study was made of the adsorption kinetics of absorbent particles remaining in a solution which passes over a bed of particles, such that the concentration of particles in the solution is a random function of time. The mathematics are developed considering the limiting cases of outward and inward diffusion for both linear and nonlinear adsorption isotherms.

Adsorption Phenomena

UDC 541.183

USSR

ZOLOTAREV, P. P., and KALINICHEV, A. I., Institute of Physical Chemistry, Acad. Sc. USSR, Moscow

"Stationary Stage of the Non-equilibrium Adsorption Dynamics for the Case of Intradiffusion Kinetics. II. Consideration of the Second Approximation"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 3, Mar 73, pp 681-684

Abstract: The first paper of this series covered the additive kinetics and diffusion factors of the diffusion of the adsorption front. This paper refines the original solution -- representing the second approximation for the case of an arbitrary convex isotherm. The case of Langmuir isotherms has been analyzed in detail.

USSR

UDC 541.183

ZOLOTAREV, P. P., and KALINICHEV, A. I., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"Stationary Stage of the Non-equilibrium Adsorption Dynamics for the Case of Intradiffusion Kinetics. I. General Equations. First (Diffusion) Approximation"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 3, Mar 73, pp 677-680

Abstract: The equation of the stationary stage of non-equilibrium adsorption dynamics of a single substance for the case of a convex isotherm has been studied. An assumption has been made that the adsorption kinetics is limited by the internal diffusion. Approximated solution for this problem has been analyzed for the situation when the kinetic and diffusion factors of the diffusion of adsorption front are additive.

1/1

USSR

UDC 541.183

ZOLOTAREV, P. P., and KALINICHEV, A. I., Institute of Physical Chemistry, Acad. Sc. USSR, Moscow

"Calculation of Temperature Changes in Cylindrical Adsorbent Grain in the Process of Adsorption. II. The Case of Finite Heat Exchange Coefficient"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1130-1134

Abstract: Formulas have been derived describing temperature changes during adsorption kinetics in a model cylindrical adsorbent grain. The lateral surface of such a grain is considered nonpermeable and thermally insulated, the adsorbate concentration being maintained constant at the frontal surfaces. It is assumed that temperature variation inside the grain is relatively small and the adsorption isotherm is linear. In contrast to the preceeding paper, the coefficient of heat exchange between the frontal surfaces of the grain and the surrounding medium a is thought to be finite.

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USSR

UDC 532.696

ZOLOTAREV, P. P., and CHURAYEV, N. V., Institute of Physical Chemistry Acad. Sc. USSR, Moscow

"The Effect of Polymolecular Adsorption on the Diffusion of Vapors in Microcapillaries. I. Phenomenon Theory"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1123-1126

Abstract: An approximation theory for the diffusion of vapors in fine cylindrical capillaries is described with consideration of polymolecular adsorption. Starting from the observation that vapor diffusion in porous bodies is accompanied by their desorption on the surface of pores, it has been proposed to use individual fine cylindrical capillaries instead of porous bodies in the studies of diffusion with concurrent adsorption; in such a case the effect of capillary condensation can be disregarded. The simplicity of the geometry of porous volume leads to a quite accurate quantitative comparison with theory in case of relatively wide capillaries with radii $\gg 10^{-5}$ cm; for finer pores a correction is needed due to the mobility of the boundaries.

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USSR

UDC 541.183

ZOLOTAREV, P. P., DUBININ, M. M., NIKOLAYEV, K. M., POLYAKOV, N. S., and RADUSHKEVICH, L. V., Institute of Physical Chemistry, Acad. Sc. USSR

"Study of the Adsorption Dynamics in a Wide Range of Concentrations. 3 Communication. Fundamentals of the Theory of the Process"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1484-1489

Abstract: In previous papers the general picture of the adsorption dynamics of a series of compounds on active carbon was analyzed. This study is devoted to theoretical considerations. To make the analysis possible, the process has been broken down into three stages: the first stage with instantaneous distribution of the concentrations along the layer; the second -- with various concentrations being shifted at different rates, changing during the process; and the third in which the entire adsorption wave is shifted at a practically constant rate. Mathematical expressions have been derived for the distribution of concentrations along the layer of adsorbent grains for short times with consideration of the effect of longitudinal diffusion. A method has been proposed for the determination of the coefficient of internal mass exchange from the known coefficient of longitudinal diffusion and distribution

USSR

ZOLOTAREV, P. P., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1484-1489

of passage concentrations along the layer. A formula was derived describing the initial portion (area of low concentrations) of the output curves under conditions of stationary front. This curve appears to be a straight line in coordinates: logarithm of relative concentration -- time.

2/2

USSR UDC 541.183

ZOLOTAREV, P. P., and DUBININ, M. M., Institute of Physical Chemistry Acad. Sc. USSR, Moscow

"Initial Stage of Intradiffusion Kinetics of the Adsorption in Spherical Grains of an Adsorbent in the Case of Nonlinear Isotherms"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 6, Apr 72, pp 1347-1350

Abstract: Intradiffusion kinetics of the adsorption on individual grains of the adsorbent, sufficiently well studied for the case of linear and perpendicular adsorption isotherms and for cylindrical form of the adsorbent with nonpermeable side surface, has been extended to spherical grains and to continuous Langmuir adsorption isotherms. On the basis of the analyzed functions, formulas have been developed for determination of the intradiffusion coefficient D_i:

where $$D_i \approx 0.028 \delta (a_0/c_0) R^2/t_{0.5}$$

$$\delta = 1/r(1+b/c_0) \left\{1 + (b/c_0)\left[m(b/c) - m(1 + b/c_0)\right]\right\}$$

1/1

USSR UDC 541.183

ZOLOTAREV, P. P., Institute of Physical Chemistry, Moscow, Academy of Sciences USSR

"Kinetics of Non-isothermal Adsorption"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 70, pp 1421-1423

Abstract: Adsorption of gases and vapors occurs with evolution of the heat of adsorption, leading to temperature changes in the adsorbent grain during the process and affecting in turn the very process itself. This paper is devoted to theoretical analysis of the adsorption kinetics based on a model cylindrical grain whose side surface is nontransparent and heat insulated. The initial stage of this process, when changes in temperature and concentration are small, and when heat exchange coefficients between the plain surface of the grain and the medium are either very large or very small, is analyzed in detail. The author thanks L. V. RADYSHKEVICH for discussing the work.

1/1

Adsorption

USSR

UDC 541.183

ZOLOTAREV, P. P., and RADUSHKEVICH, L. V., Institute of Physical Chemistry of the Academy of Sciences USSR, Moscow

"Temperature Variation in Adsorbent Grain During Adsorption"

Moscow, Zhurnal Fizicheskoy Khimii, Vol XLIV, No 12, Dec 70, pp 3096-3098

Abstract: Temperature within adsorption grains is known from experiments to vary in a degree proportional to the rate at which the grain adsorbs material, and to vary inversely with the facility of heat transfer between the grain and the surrounding medium, reaching a maximum within a period of time shorter by a factor of several powers of 10 than that required to establish adsorption equilibrium.

Assuming that the grains are spherical, and limiting themselves to linear and rectangular isotherms, the authors derive several formulas which reflect approximately the course of temperature change during adsorption (rectangular isotherms, in particular, are characteristic of adsorption on synthetic zeolites and activated carbon). Several different factors must be determined experimentally to use these formulas.

1/1

Adsorption

USSR UDC 542.63 + 541.183

ZOLOTAREV, P. P., and RADUSHKEVICH, L. V., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"Kinetics of Nonisometric Adsorption"

Moscow, Doklady Akademii Nauk SSSR, Vol 195, No 6, Dec 70, pp 1361-1364

Abstract: A theoretical analysis is presented on the adsorption kinetics on individual adsorbent grains with consideration of heat evolution. Two types of models are analyzed: a spherical one and a cylindrical model. It has been shown that the initial stage of adsorption kinetics in the cylindircal grain postulated may be described by a simple differential equation whose solution is much easier than that of the starting system. Formulas have been developed for the distribution of temperature in the grains at the time when relative temperature variations in the adsorption process are still small.

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INTERNAL DIFFUSION IN A GRAIN OF ADSORBENT WITH A VARIABLE COEFFICIENT OF DIFFUSION AND A NONLINEAR ISOTHERM -U-

AUTHOR-(02)-ZOLOTAREV, P.P., RADUSHKEVICH, L.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 244-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ADSORPTION, ISOTHERM, DIFFUSION COEFFICIENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2072 STEP NO--UR/0076/70/044/001/0244/0246

CIRC ACCESSION NO--AP0125659

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70

IRC ACCESSICN NO--AP0125659

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE APPROX. SOLN. OF THE PROBLEM OF INTERNAL DIFFUSION IN AN ADSORBENT GRAIN IS PRESENTED FOR DIFFERENT NONLINEAR ISOTHERMS AND CONCN. DEPENDENT DIFFUSION COEFFS. RELATIVELY SIMPLE FORMULAS FOR THE CONCN. OF ADSORBATE IN THE MOVING AND STABLE PHASES ARE DERIVED FOR A PRISMATICALLY OR CINDRICALLY SHAPED GRAIN.

FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--DERIVATION OF GENERAL EQUATIONS OF ADSORPTION DYNAMICS FOR A FIXED GRANULAR POROUS MEDIUM -U-

AUTHOR-(02)-ZOLOTAREV, P.P., RADUSHKEVICH, L.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ., KHIM. 1970, 44(4), 1071-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CALCULATION, ADSORPTION, ISOTHERM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0759 STEP NO--UR/0076/70/044/004/1071/1076

CIRC ACCESSION NO--AP0136196

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136196

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MATH. CALCNS. WERE MADE FOR ISOTHERMAL AND NONISOTHERMAL SORPTION. FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

USSR UDC: 541.183

ZOLOTAREV, P. P., and RADUSHKEVICH, L. V., Institute of Physical Chemistry, Moscow, Academy of Sciences USSR

"Derivation of General Adsorption Dynamics Equations for a Stationary Granular Porous Medium"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 4, Apr 1970, pp 1071-1076

Abstract: This paper concerns the derivation of adsorption dynamics equations for a stationary granular porous medium for both isothermic and non-isothermic cases. In order to derive the differential equations of adsorption dynamics, use is made of the concept of a compact medium which, on the one hand, must absorb the admixture and, on the other, must be permeable for the gas or liquid-carrier. A real sorption medium always comprises sorbent grains with gaps forming a chaotic system of passes -- cavities termed as pores. It is assumed that this porous space is statically uniform and isotropic. A real sorbent layer may be regarded as a compact medium under the assumption that the elementary macrovolume for such a medium is volume $\Delta\Omega$ which comprises an adequate number of grains and pores, yet is small when compared to the scale of transfer processes. It follows 1/2

USSR

ZOLOTAREV, P. P., et al, Zhurnal Fizicheskoy Khimii, Vol 44, No 4, Apr 1970, pp 1071-1076

that all values which enter the adsorption dynamics equations actually are corresponding mean values with respect to $\Delta\Omega$. Strictly speaking, these equations must be derived by averaging, with respect to $\Delta\Omega$, the appropriate mass- and heat-transfer equations which are valid for individual pores and grains. An attempt to derive such equations is described in this study.

2/2

USSR

UDC: 541.183

ZOLOTAREV, P. P., and RADUSHKEVICH, L. V., Institute of Physical Chemistry, Moscow, Academy of Sciences USSR

"Dynamics and Kinetics of Nonisothermic Adsorption"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 4, Apr 1970, pp 889-899

Abstract: This study deals with derivation of adsorption dynamics equations with due regard for heat release for a stationary granulated porous medium. The meaning of the individual terms of these equations is discussed. The study also covers the kinetics of nonisothermic adsorption in a single grain of the adsorbent. Particular consideration is given to equations describing the initial stage of this process. For the nonisothermic adsorption dynamics use is made of an averaged description, in which a granular mixture is regarded as a continuous medium. It is possible to represent a real granular layer in the form of a continuous medium, provided one assumes that the elementary macrovolume for such a medium is volume $\Delta\Omega$ which incorporates an adequate number of grains, though is small when compared to the dimensions of the layer. It follows

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USSR

ZOLOTAREV, P. P., et al, Zhurnal Fizicheskoy Khimii, Vol 44, No 4, Apr 1970, pp 889-899

that all values entering the adsorption dynamics equations are corresponding mean values with respect to $\Delta\Omega$. The kinetics of adsorption in a single grain of the adsorbent with consideration for heat release is given mathematical treatment and the equations are derived.

2/2

Acc. Nr: AP0036529 Ref. Code: UR 0069

PRIMARY SOURCE: Kolloidnyy Zhurnal, 1970, Vol 32, Nr 1, PP 56-59

ON THE KINETICS OF THE STREAMING POTENTIAL ESTABLISHMENT

Zolotarev, P. P.; Chrayev, N. V.

Summary

The kinetics of the establishment of the steady streaming potential have been studied. A model consisting of two vessels of the same volume connected by a system of parallel slit pores or liquid films has been used in calculations. The results of calculations agree satisfactorily with the known experimental data.

D.R.

REEL/FRAME
19721377

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USSR

UDC 541.183

ZOLOTAREV, P. P., Institute of Physical Chemistry, Acad. Sc. USSR, Moscow

"Equilibrium Dynamics of the Adsorption in Case of a Perpendicular Isotherm and Varying Concentration of the Adsorptive in the Stream".

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 11, Nov 72, pp 2838-2841

Abstract: A theoretical mathematical treatment is reported of the equilibrium dynamics of the adsorption, with the consideration of longitudinal diffusion in the stationary layer. The concentration of the adsorbent at the edge of this layer is arbitrary, increasing gradually from zero to a certain constant value $c_0:(0,t) = c_0\psi(t)$, $0 \leq \psi t \leq 1$, as a function of time. The adsorption isotherm was considered to be perpendicular.

1/1

USSR

UDC: 621.375.4

YUR'YEV, V. I., ZOLOTAREV, S. S.

"A Differential Amplifier"

USSR Author's Certificate No 250216, filed 28 Mar 68, published 9 Jan 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 70, Abstract No 11A94 P)

Translation: This Author's Certificate introduces a differential semiconductor amplifier with pulse conversion of the input signal. In each arm of the amplifier is a self-excited oscillator based on transistors and on a transformer with working and signal feedback windings. The amplifier also contains bias circuits. To reduce the probability of a false signal at the output and to increase efficiency, the emitter of each of the transistors is connected to a ground bus through semiconductor diodes connected in parallel opposition, while the collector is simultaneously connected to a device for forced cut-off of self-oscillation and -- through a series circuit made up of a fuse and the working winding of the transformer -- to the positive terminal of the power supply. One illustration. V. M.

1/1

USSR

UDC: 621.396.6-181.5

ZOLOTAREV, T. V., OSTAPENKO, G. S., PETROV, L. N., UDOVIK, A. P., ARAKCHEYEVA, I. A., NIKISHIN, V. I., and ALEKSENKO, A. G.

"Effect of Distributed Capacitance and Geometric Dimensions of Monolithic Circuit Resistors on Their Frequency Characteristics"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 10, pp 1272-1275

Abstract: This brief communication deals with parasitic effects in integrated circuits manufactured by the planar-epitaxial process, with the elements separated by p-n junctions. The resistors in such a circuit are inserted by diffusion methods, and are thus especially subject to parasitic elements including a distributed transistor and distributed capacitances of p-n junctions. As proof, the cross section of an integrated circuit with its diffusion resistor is shown, and with it the equivalent circuit. From this circuit, the authors conclude that the frequency effect of the resistor is inversely proportional to the width of the resistor -- at least up to the practical limit of resistor width, which is about 10 μ. Nomograms are shown which can be used for determining the geometric dimensions and limiting frequency of the monolithic resistors from the known resistance values, or the reverse. A plot of the frequency characteristics of two monolithic resistors is also given.

USSR

UDC 621.397.331.5

GOLOVIKHINA, V.P., ZOLOTAREV, V.F.

"Analysis Of Nonvacuum Methods Of Television Image Conversion With Stored Charge"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Moscow, Izd-vo "Sovetskoye Radio," No 4, 1971, pp 229-238

Abstract: The problems are considered of further development of methods of evaluating the characteristics of the quality of image conversion and the information characteristics of solid-state methods of television image conversion. The principal circuit of a nonvacuum method of television image conversion and the equivalent circuit of a solid-state image converter are shown. Relationships are developed for the signal-to-noise ratio, responsiveness, transmission frequency of frames, video signal amplitude, and others, and also for performance, information responsiveness and the percentage of information which is admitted. The number of lost frames because of photoelectric and commutation time lags is estimated. The dependences are cited of responsiveness, performance, transmission frequency of frames, information and relative responsiveness of known methods of image conversion in a video signal, on the resolution. It is concluded that the most promising methods of television image conversion are methods which use commutation by electrical setting [taktovyy] pulses and by a neuristor pulse. 5 fig. 12 ref.
1/1

USSR

UDC 621.383.8:621.383.4

GOLOVIKHINA, V. P., ZOLOTAREV, V. F.

"Analysis of Nonvacuum Methods of Television Conversion of Images with Charge Storage"

V sb. Mikroelektronika (Microelectronics -- Collection of Works), Issue 4, Moscow, "Sov. radio," 1971, pp 229-238 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B321)

Translation: Problems are considered of the further development of methods of evaluation of the characteristics of the quality of image conversion and the information characteristics of solid-state methods of TV image conversion. Relations are derived for the signal-to-noise ratio, sensitivity, frame transfer frequency, the amplitude of the video signal and others, and also for the output, information sensitivity and percent of information passed. The number of lost frames because of photoelectric and commutation inertia is evaluated. The dependence of the sensitivity, output, frame transfer frequency, information and comparative sensitivity of known methods of converting images into a video signal upon resolving power is considered. 5 ill. 12 ref. Author's Abstract.
1/1

USSR

UDC 621.383.9

ZOLOTAREV, V. T.

"Nonvacuum Analogs of Television Camera Tubes (by Soviet and Foreign Sources)"

Elektron. prom-st'. Nauch-tekhn. sb., (Electronics Industry. Scientific-Technical Collection), 1970, No 2, pp 51-58 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B227)

Translation: Methods are considered for nonvacuum conversion of images into a video signal with and without the use of the principle of charge storage, and also with intermediate storage of information between the recording and readout of the image. A classification is given of nonvacuum methods and their respective analysis with an evaluation of their promise.

1/1

USSR

UDC 621.391.2.018.756:62-50.001.57

BESHANOV, A. M., ZOLOTAREV, V. F., KOMAROVSKIKH, K. F., SHKUROPAT, I. G.

"Study of the Properties of a Neuristor Line Based on Plane-Epitaxial Thyristors"

Moscow, Radiotekhnika i Elektronika, Vol XVI, No 2, February 1971, pp 399-403

Abstract: This article contains the results of a study of a neuristor pulse in a line based on plane-epitaxial thyristors with a stepsize of 0.7 and 0.1 mm. It is demonstrated that with a thyristor stepsize of 0.7 a quite strong relation is exhibited for a RC-circuit capacitance of 50-60 picofarads; for aneuristor line with a stepsize of 0.1 mm an additional inserted capacitance is no longer needed. When investigating the delay time of theneuristor pulse, a weak relation is noted between the delay time (within the limits of 5%) and the bias; additional devices for stabilizing the scanning speed are no longer needed here. In addition, by varying the bias it is possible to change the propagation rate of theneuristor pulse within broad limits of 10^6 to $2 \cdot 10^3$ cm/sec.

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USSR

BESHANOV, A. M., et al., Radiotekhnika i Elektronika, Vol XVI, No 2, February 1971, pp 399-403

Thus, it is found that it is possible to manufacture a neuristor line with an active element (thyristor) stepsize no greater than 100 microns based on plane-epitaxial technology. The neuristor pulse length is 100-50 nanoseconds. Providing coupling of the neuristor line thyristors through the lower base leads to the fact that the neuristor pulse encompasses less than 1 cascade. This makes it possible to vary the propagation rate as pointed out above. Within certain limits the scanning rate depends weakly on the bias and has a maximum for a load capacitance of about 100 picofarads.

2/2

USSR

UDC 621.383.82

ZAMFIR, G.N., ZOLOTAREV, V.E., RABINOVICH, T.M.

"Scanistor With Discrete Base"

Uch. zap. Ul'yanovsk. gos. ped. in-ta (Scientific Annals Of Ul'yanovskiy State Pedagogical Institute), 1970, 24, Issue 3, Part 1, pp 106-147 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B306)

Translation: The design of a line element of a silicon scanistor with a discrete [diskretnyy] base is described and the special features of its operation are considered. An analysis is conducted of the voltampere and load characteristics of the scanistor. The effect of the time lag of the diode elements on the parameters of the scanistor is considered. The specific resolution of the scanistor equals 44 lines to 1 mm, and the sensitivity threshold is $\sim 1.5 \cdot 10^{-13}$ watt. 14 ref. I.B.

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USSR UDC 621.383-182.7

ZAMFIR, G.N., ZOLOTAREV, V.F., RABINOVICH, TS. M.

"Scanistor With Continuous Base"

Uch. zap. Ul'yanovsk. gos. ped. in-t (Scientific Annals Of Ul'yanovskiy State Pedagogical Institute), 1970, 24, Issue 3, Part 1, pp 83-105 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B305)

Translation: An equivalent circuit is considered and a method is proposed for computation of a scanistor with a continuous [nepreryvnyy] base. An experimental scanistor is described which possesses a threshold sensitivity $\sim 10^{-13}$ watt. 11 ref. I.B.

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USSR

UDC: 621.397:621.396.61(088.8)

ZOLOTAREV, V. F., STAFEYEV, V. I.

"Non-Vacuum Analog of a Television Transmitting Tube"

USSR Author's Certificate No 258374, filed 2 Feb 66, published 24 Apr 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11G100 P)

Translation: The given Author's Certificate introduces a device which is a non-vacuum analog of a TV transmitting tube which does not require light beam deflection for image scanning. The device contains a photoconductive layer applied on a multilayer semiconductor structure with thyratron characteristics. This structure is supported by a metal substrate and is divided into lines which are neuristor lines. A modification is possible with two sensitized surfaces for comparing specimens or for tracking moving objects. N. S.

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USSR

UDC 621.383.82

ZOLOTAREV, V.F.

"Nonvacuum Analog Of Camera Tube"

USSR Author's Certificate No 258375, filed 2 Feb 66, published 4 June 70 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B297P)

Translation: An image transducer--nonvacuum analog of a camera tube is proposed, which consists of a multilayer semiconductor structure with thyratron characteristics applied to a metal substrate, an insulating layer, metal strips applied to it, and a semitransparent conducting layer. In the transducer, photocapacitance is used as a distributed energy storage unit for a neuristor line, which assists a decrease in inertia of the device. N.S.

1/1

1/2 036 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--MATRIX PHOTOELECTRIC IMAGE CONVERTER -U-

AUTHOR-(03)-GOLOVIKHINA, V.P., ZOLOTAREV, V.F., SUKHANOV, S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK TURKM. SSR, SER. FIZ.-TEKH., KHIM. GEOL. NAUK 1970, (2), 84-92
DATE PUBLISHED--------70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--PHOTOELECTRIC METHOD, CADMIUM SULFIDE, CADMIUM TELLURIDE, IMAGE CONVERTER, PHOTORESISTOR, TV CAMERA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1229 STEP NO--UR/0202/70/000/002/0084/0092

CIRC ACCESSION NO--AP0136640
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

2/2 036

CIRC ACCESSION NO--AP0136640

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. METHODS WERE DEVELOPED TO DESIGN THE MATRIX PHOTOELEC. CONVERTER TO BE USED AS A SOURCE OF VIDEO SIGNALS IN A TELEVISION CAMERA WITHOUT ANY VACUUM SYSTEM. THE MATRIX IS ASSUMED TO COMPRISE CONDUCTIVE RAILS OF TE, PERPENDICULAR TO AL RAILS, AND CDS PHOTORESISTORS, N,CDS,P,CDTE JUNCTIONS BEING PRODUCED AT THE CONTACTS OF TE AND CDS. HORIZONTAL AND VERTICAL SWEEP GENERATORS OF SIMILAR ELEMENTS ARE PROPOSED. CIRCUIT SCHEMES ARE GIVEN. THE RELATION BETWEEN THE MATRIX AND INDIVIDUAL ELEMENT PARAMETERS WAS DERIVED. AS AN EXAMPLE, A CAMERA WAS DESIGNED WHICH HAD A SENSITIVITY OF 1.5 TIMES 10 PRIME NEGATIVE3 LX, VIDEO SIGNAL VOLTAGE 4 MV, AND 625 LINES. HORIZONTAL AND VERTICAL SWEEP GENERATOR PARAMETERS ARE TABULATED.

FACILITY: FIZ.-TEKH. INST., ASHKHABAD, USSR.

UNCLASSIFIED

USSR

UDC 621.383.8

ZAMFIR, G. N., Leningrad, ZOLOTAREV, V. P., Moscow

"A Photoelectric Image Converter Which Utilizes the Suhl Effect"

Moscow, Avtomatika i Telemekhanika, No 8, Aug 1970, pp 159-165

Abstract: A method is developed for calculating the parameters of a device which converts an image to a video signal on the basis of the Suhl magneto-concentration effect. Expressions are given for the signal-to-noise ratio, resolution, video signal amplitude and so forth. It is found that the resolution of a Suhl effect image converter is limited by the mobility of the minority charge carriers (minimum Hall angle) and the mobility of the majority carriers (maximum Hall angle). The most suitable semiconductor which satisfies the requirements for maximum mobility of majority carriers and minimum mobility of minority carriers is gallium arsenide.

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USSR

UDC: 621.382.3

ZOLOTAREV, V. E., SHAMSHEV, B. B.

"Formation of a Neuristor Pulse in a Two-Transistor Model of a PNPN Structure"

Kiev, IVUZ Radioelektronika, Vol 15, No 5, May 72, pp 571-575

Abstract: The process of actuation of a two-transistor model of a PNPN structure across a capacitive energy accumulator is considered. The parameters of the transient process are analyzed to give expressions which define the principal parameters of the resultant neuristor pulse: rise time, decay time, amplitude and duration. It is shown that the parameters of the neuristor pulse are determined to a great extent by processes of charge alternation across the capacitance of the central junction of the thyristor. Experimental data are presented which confirm the principal conclusions of the work.

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USSR

UDC: 621.38

GOLOVIKHINA, V. P., YELISEYEV, V. A., and ZOLOTAREV, V. F.

"Minimum Cascaded Capacitance of Neuristors"

Kiev, Izvestiya VUZ SSSR--Radioelektronika, No 6, 1972, pp 767-773

Abstract: The purpose of this paper is to compute the minimum capacitance of the load determining the minimum dimensions of a neuristor stage, and to derive the general conditions for propagating a pulse along the neuristor. To do this, the minimum value of the cascaded neuristor must be computed as a function of the distance between thyristor stage and the lower base point. This paper, which shows how the computation is done, is the sequel to an earlier paper of the two last-named authors above (Poluprovodnikovaya model' neyrona -- A Semiconductor Model of the Neuron -- Uch. zap. DVGU, Vladivostok, Ser. fiz.-mat. nauk, 1969, 17, p 152) in which it was shown that the excitation, formation, and propagation of a pulse in a neuristor line using partially distributed, quasi-matrix, planar epitaxial thyristors connected at the lower base are possible because of the above-mentioned capacitance and its ability to store energy.

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USSR

UDC 535.34+535.397 = 15

ZOLOTAREV, V. M., and MOROZOV, V. N.

"Optical Constants of GeO_2 Oxides in 200-4000 cm^{-1} Region"

Leningrad, Optika i Spektroskopiya, Vol 34, vyp 2, Feb 73, pp 319-322

Abstract: The optical constants of the three principal modifications of germanium dioxide -- amorphous (glass), hexagonal (polycrystal), and tetragonal (polycrystal) -- were calculated in the 200-4000 cm^{-1} region from IR reflection spectra.

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USSR

UDC: 542.65:546.289

MOROZOV, V. N., ZOLOTAREV, V. M.

"Investigation of the Structure of Thin Surface Films on Vitreous GeO_2"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 18, No 3, Mar 73, pp 510-512

Abstract: Infrared spectroscopy was used to study the structure of thin surface films which form on vitreous germanium dioxide exposed to the atmosphere. Vlasov's recursion formulas were used to calculate the IR reflection spectra of crystal films of hexagonal germanium dioxide of various thickness on a massive base of vitreous germanium dioxide. The calculated spectra show that for a film thickness of about 0.1 μm the coefficient of reflection in the region of the intense fundamental band increases, the position of the maximum shifting toward longer waves than the spectrum of the initial glass. The substrate seems to have no effect on the spectrum of films 5-10 μm thick. These theoretical spectra were used to determine the thickness and structure of real films. Experiments showed good agreement with theory for the thinnest films. Discrepancies observed with an increase in film thickness are attributed to nonuniformity of the experimental films. The films of greater thickness apparently con-

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USSR

MOROZOV, V. N., ZOLOTAREV, V. M., Zhurnal Prikladnoy Spektroskopii, Vol 18, No 3, Mar 73, pp 510-512

tain considerable inclusions of amorphous phase along with the crystalline hexagonal germanium dioxide. The part played by these inclusions is to be analyzed in a future paper. The authors thank V. V. Veremey for assistance with the work.

2/2

USSR

ZOLOTAREV, V. M.

"Estimate of Difference of Distributions in Levy Metrics"

Tr. Mat. In-ta. AN SSSR [Works of Mathematical Institute, Acad. Sci. USSR], Vol 112, Part 1, 1971, pp 224-231 (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V8 by I. Ostrovskiy).

Translation: This article contains a developed presentation of the results announced by the author earlier (RZhMat, 1970, 9V7).

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USSR

UDC 636.394

ZOLOTAREV, V. M.

"Spectroscopy of Disrupted Total Internal Reflection The Use of Polarized Light in Compensation Measurements"

Leningrad, Optika i Spektroskopiya, No 3, September 1970, pp 519-522

Abstract: A description is given of a new method of compensation measurements as applied to the spectrometry of disrupted total internal reflections. The operation of this method is based upon utilization of the ratio of "effective thickness" to the azimuth of plane-polarized light incident upon the partition boundary of two media (one of the media is the investigated one) at an angle greater than the critical angle. 5 figures, 7 bibliographic entries.

1/1

1/2 041 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PERTURBED TOTAL INTERNAL REFLECTION SPECTRA OF LIQUID CRYSTALS -U-

AUTHOR-(03)-ZOLOTAREV, V.M., BELYAYEVSKAYA, N.M., BOBOVICH, YA.S.

2

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(1), 195-7

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--IR REFLECTANCE, PERTURBATION, LIQUID CRYSTAL, LIGHT REFRACTION, LIGHT REFLECTION, AMINE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1784 STEP NO--UR/0051/70/028/001/0195/0197

CIRC ACCESSION NO--AP0112770

UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0112770

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INFRARED MULTIPLY PERTURBED TOTAL INTERNAL REFLECTION (MPTIR) WAS USED TO STUDY THE LIQ. CRYSTAL STATE. THE MPTIR METHOD DEPENDS ON THE PENETRATION OF A LIGHT RAY INTO AN OPTICALLY LESS DENSE MEDIUM DURING REFLECTION AT A 2 PHASE BOUNDARY AT INCIDENT ANGLES LARGER THAN THE CRIT. ANGLE. AN EXPT. WITH 8,(PHENYLAZO),N,ANISAL,1,NAPHTHYLAMINE IS GIVEN AS AN EXAMPLE OF SUCH A MEASUREMENT.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--DISPERSION AND ABSORPTION OF LIQUID WATER IN INFRA RED AND RADIO FREQUENCY REGIONS -U-

AUTHOR-(04)-ZOLOTAREV, V.M., MIKHAILOV, B.A., ALPEROVITCH, L.I., POPOVA, S.I.

COUNTRY OF INFO--USSR

SOURCE--OPT. COMMUN. (NETHERLANDS), VOL. 1, NO. 6., P. 301-2 (JAN. 1970)

DATE PUBLISHED----JAN70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--IR ABSORPTION, ELECTROMAGNETIC WAVE DISPERSION, WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0083 STEP NO--NE/0000/70/001/006/0301/0302

CIRC ACCESSION NO--AP0102173

UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0102173

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. VALUES OF THE OPTICAL CONSTANTS, N AND L (N EQUALS N-IK), OF LIQUID WATER AT 25DEGREESC OVER THE RANGE OF 1-1 TIMES 10 PRIME6 MU, OBTAINED UNDER OPTIMUM SELECTION OF EXPERIMENTAL METHODS ARE TABULATED. KRAMERS KRONIG'S RELATIONSHIPS (KK) WERE USED.

FACILITY: STATE UNIV. V.I. LENIN OF TADJIKISTAN, DIOUCHAMBE, USSR.

UNCLASSIFIED

USSR

UDC 535.34

MIKhAYLOV, V. A., ZOLOTAREV, V. N., and DAKhShIYeV, N. G.

"The Relation Between the Observed and Real Absorption Spectra of Molecules in a Condensed Medium. VII. On One of the Physical Causes for the Violation of Beer's Law in Concentrated Solutions."

Leningrad, Optika i Spektroskopiya, Vol 34, No 6, Jun 73, pp 1082 - 1087

Abstract: Factors related to the dispersion of an effective field of light waves acting on molecules in a condensed medium must, in the general case, lead to a violation of Beer's law. These violations are usually explained on the basis of a change in the coefficient of absorption due to the presence in the system of intermolecular interactions, without specifying the nature of these interactions. Detailed quantitative studies of a 2-component CCl_4 -- $CHBr_3$ system in the region of the intense ν_3 oscillation band of the CCl_4 molecule (700 - 800 cm^{-1}) show that there are effects due to the light field and due to intermolecular interactions. The authors use a model of the system in which the absorption capacity is characterized by spectral values such as the spectra of the Einstein coefficients and the optical polarizability. Using the corrected characteristic, the model approaches quite closely to Beer's law. The difference between the model and the actual values is considered to be due to the effects of concentration on molecular characteristics. It is suggested that a generalized Lorentz-Lorentz equation can be used to determine the relative contributions of these two factors.

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USSR UDC: (621.391.82:621.396.44):621.317.743(088.8)

BERKMAN, N. A., ZOLOTAREV, Ya. M., PONOMARENKO, V. A., RAKHLIN, Ya. A., SKITOV, I. I., STEKLOVA, I. P.

"A Device for Analyzing Pulse Noises and Interruptions in a Communications Channel"

USSR Author's Certificate No 266858, filed 12 Dec 67, published 15 Jul 70 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A294 P)

Translation: Conventional devices for measuring and analyzing pulse noises and interruptions in communications channels are designed for studying telephone channels in the 300-3400 Hz range and group channels in high-frequency telephony systems in the 60-108 kHz range. These devices are unsuited for studying channels in the 312-550 kHz range, and moreover they do not give the required resolution and are not distinguished by high reliability. It is proposed that a short-pulse clamping unit be connected between the selector and quantizing modules with a quantizing pulse oscillator output connected to the controlling input of the clamper through a delay element. A pulse time gradation module is connected between a binary counter and the coincidence circuits of the pulse duration analyzer. When the device is operating in the pulse noise analysis mode, it is connected to a free

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BERKMAN, N. A. et al., USSR Author's Certificate No 266858

channel; when operating in the interruption analysis mode, the device is connected to a channel through which a measurement frequency signal is transmitted. A. K.

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USSR

UDC 621.385.032

ZOLOTAREV, YE. I., LAZERSON, A.G., RYZHENKO, B.F.

"Theoretical Investigation Of Deceleration Systems Of The 'Plates With Rings' Type"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 8, 17-28 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A39)

Translation: A deceleration system (DS) is considered, which consists of a periodic succession of flat rings connected by several plates. The symmetry properties of the DS in question are investigated and the number of wave modes which can be propagated in similar DS is determined. The components of the electromagnetic field and the approximate dispersion equation of various wave modes in a "plates with rings" DS are found with the aid of the method of partial domains, the Fourier method, and one of the projection methods. The formula obtained is for computation of the coupling impedance of the spatial harmonics of the wave. 5 ref. Summary.

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USSR

UDC: 681.3

ZOLOTAREV, Yu. G., IVANOVA, R. P.

"Detection and Correction of Errors in Weakly Positional Systems of Notation"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1971, vyp. 4(30), pp 118-127 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V904)

Translation: The authors consider methods of constructing formulas of restitution in weakly positional systems of notation and use of these methods for detecting and correcting errors in data transmission and processing. Six theorems are proved in this connection. Illustrative examples are given. V. Mikheyev.

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1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--MASS SPECTROMETRIC STUDY OF AMINODEOXY SUGARS -U-

AUTHOR-(05)-VULFSON, N.S., ZOLOTAREVA, G.M., BOCHKAREV, V.N., SMOLINA, Z.I., UNKOVSKIY, B.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD, NAUK SSSR, SER. KHIM 1970, (2), 437-9

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MASS SPECTROMETER, SUCROSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0517 STEP NO--UR/0062/70/000/002/0437/0439

CIRC ACCESSION NO--AP0121191

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121191

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MASS SPECTRA WERE DESCRIBED BY LINE TABULATIONS FOR 10 3,AMINO,3,4,DIDEOXY SUGARS. IN THE MOL. IONS OF THESE SUGARS, A NEW FORM OF RING CLEAVAGE WAS FOUND IN WHICH THE 2-3 BOND IS RUPTURED ALONG WITH THE CYCLIC HEMIACETAL BOND, SO AS TO FORM AFTER MIGRATION OF THE H ATOM TO THE N FRAGMENT, AN ION R SUB2 N PRIME POSITIVE:CHCH SUB2 CHROH AS A RESULT OF ENERGETIC ADVANTAGE OF THIS FORM OF CLEAVAGE VS. THE CONVENTIONAL ONES OBSERVED FOR OTHER SUGAR DERIVS.

FACILITY: INST. KHIM. PRIR. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 546.185:541.651.2

ZHMUROVA, I. N., YURCHENKO, V. G., KUKHAR', V. P., and ZOLOTAREVA, L. A., Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"The Effect of the Substituents at the Phosphorus Atom on the Reactivity and Electron Donor Properties of the Phosphazo Group"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 12, Dec 72, pp 2656-2660

Abstract: In an attempt to compare the effects of substituents on the basicity constants and electron spectra of phosphazobenzenes, pK_a values of a series of triazylphosphazobenzenes were determined. The basicity constants vary considerably with the electron nature of alkyl substituents -- up to 6-7 pK_a units. The substituents at the phosphorus atom have a lesser influence on the electron donor properties of the phosphazo group in the excited state than on the reactivity of the P:N.

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USSR

UDC 547.419.1

ZHMUROVA, I. N., YURCHENKO, R. I., KUKHAR', V. P., ZOLOTAREVA, L. A., and KIRSANOV, A. V., Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"Protonation of Triphenylphosphazoazobenzenes. II. Effect of Substituents on the Position of Tautomeric Equilibrium"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1954-1959

Abstract: Tautomeric equilibrium in the solutions of 4-triphenylphosphazoazobenzene salts depends on the concentration of acid as well as on the electronic nature of the substituents at 4'-position. The differences in absorption maxima in neutral and acid media and the basicity constants of 4-triphenylphosphazoazobenzenes can be correlated with the σ^- constants of 4'-substituents.

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USSR

UDC 547.558.1

KUKHAR', V. P., ZHMUROVA, I. N., ZOLOTAREVA, L. A., and TUKHAR', A. A., Institute of Organic Chemistry, Acad. Sc. UkrSSR

"Basicity of Phosphazo Compounds. II. N-(4-Triphenylphosphazobenzylidene)-anilines and Triphenylphosphazoanilines"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 8, No 4, Apr 72, pp 756-758

Abstract: 3- or 4-X-N-(4-triphenylphosphazobenzylidene)anilines are more basic than the corresponding N-(4-dimethylaminobenzylidene)anilines by about 2-3.5 pK_a units. Their basicity constants correlate with the σ^- constants of the substituent X. This indicates that N-(4-triphenylphosphazobenzylidene)anilines are protonated at the triphenylphosphazo group, and N-(4-dimethylaminobenzylidene)anilines are protonated at the nitrogen atom of the CH=N group. N,N-Dimethyl-p-phenylenediamine is protonated at the dimethylamino group. Triphenylphosphazo anilines add a proton to the nitrogen atom of the triphenylphosphazo group. p-Triphenylphosphazoaniline is more basic than p-phenylenediamine (pK_a 11.85) and N,N-dimethyl-p-phenylenediamine (pK_a 13.00), but less basic than p-bis-(triphenylphosphazo)phenylene (pK_a 18.72).

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USSR

UDC 546.185

KUKHAR', V. P., BOYKO, A. P., ZOLOTAREVA, L. A., and KIRSANOV, A. V.,
Institute of Organic Chemistry, Academy of Sciences, UkrSSR

"Trichlorophosphazoperchloroethane in the Friedel-Crafts Reaction"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 281-283

Abstract: The authors study the catalytic activity of Lewis acids in the Friedel-crafts reaction. In the reaction of trichlorophosphazoperchloroethane with benzene, the catalytic activity of Lewis salts decreases in the order $SbCl_5>AlCl_3>FeCl_3>SnCl_4>TiCl_4$. In the case of toluene, the reaction proceeds somewhat more readily in the presence of $SbCl_5$, while chlorobenzene reacts less readily than benzene with this catalyst. The reaction of trichlorophosphazoperchloroethane with other organic solvents in the presence of Lewis acids leads to resin formation and difficulty in isolating the corresponding trichloromethylketones. N-Dichlorophosphonyliminotrichloroacetyl chloride reacts much more slowly with benzene in the presence of antimony pentachloride than does trichlorophosphazoperchloroethane with a much lower yield of trichloroacetophenone.

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1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--TREATMENT FOR CATARACTS; THE ACTUAL PROBLEM OF OPHTHALMOLOGY -U-

AUTHOR--ZOLOTAREVA, M.M.

COUNTRY OF INFO--USSR

SOURCE--ZDRAVOOKHRANENIYE BELORUSSII, 1970, NR 3, PP 3-6

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EYE, SURGERY, CATARACT, VISUAL ACUITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/1543 STEP NO--UR/0477/70/000/003/0003/0006

CIRC ACCESSION NO--AP0052747

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0052747

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASING ON THE FINDINGS OF THE EYE DEPARTMENT OF THE BYELORUSSIAN INSTITUTE OF DOCTOR PERFECTION, MEDICAL WORKING PRACTICE OF EXPERTS AND LITERATURE SURVEY, THE AUTHOR SHOWS THE FREQUENCY OF CATARACTS AND THEIR SPECIFIC GRAVITY IN THE ETIOLOGY OF BLINDNESS AND INVALIDITY. THE INDICATIONS OF CATARACT EXTRACTION ARE WIDENED IRRESPECTIVE OF THEIR MATURITY LEVEL ONLY UNDER CONDITIONS OF A CONSIDERABLE LOWERING OF THE EYE SHARPNESS AND THE PATIENT'S WORKING CAPACITY. THE OPERATION TECHNICAL PECULIARITIES ARE TAKEN INTO ACCOUNT DEPENDING UPON THE KIND OF CATARACT.

UNCLASSIFIED

USSR

UDC 578.087.1

NECHAYEV, I. A., GRAYEVSKAYA, B. M., ZOLOTAREVA, N. N., and CHUDINOVSKAYA, G. A.

"A Statistical Approach to Estimating Individual Radiation Sensitivity in Animals"

Moscow, Matematicheskiye metody v biologii [Mathematical Methods in Biology], Publishing House of Moscow University, 1972, pp 117-126

Abstract: An attempt is made in this paper to give individual, lifetime estimates of the sensitivity of mammals (rats) to radiation on the basis of the experimental material, and thus to indicate approaches to forecasting the result when the animals are subjected to it. The system according to which the authors make their computations is based on the important concept of the slight regression in individual indexes in accordance with selected tests of radiation sensitivity, on the one hand, and the almost complete absence of correlations between the tests, on the other. After an exposition of the history of the subject of animal sensitivity to radiation, the authors proceed to an analysis of correlation functions for the purpose of obtaining indexes permitting estimates of the relative sensitivity to radiation of animals without actually irradiating them. The authors use these criteria

USSR

NECHAYEV, I. A., et al., Matematicheskiye metody v biologii, Publishing House of Moscow University, 1972, pp 117-126

for the condition of the animals: first, the amount of sugar in the blood and the reaction of the blood to the introduction of adrenalin; second, the proteinase action of the blood computed according to the formula $P_u = (P_t - P_0)/P_0$, where P_0 is the activity of the blood proteinase before incubation, and P_t is the activity of the blood proteinase after 24 hours of incubation at a temperature of 37°C; third, the number of leukocytes in the peripheral blood. A table comparing the actual results with the results predicted by this statistical method shows a close correlation.

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USSR

UDC 628.1.034:628.175:541.13

SHAPOSHNIK, V. A., RESHETNIKOVA, A. K., ZOLOTAREVA, R. I., DROBYSHEVA, I. V., and ISAYEV, N. I., Voronezh Technological Institute

"Water Demineralization by Means of Electrolysis With Intermembrane Ion Exchange Resin Filling"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 46, No 12, Dec 73, pp 2659-2663

Abstract: A method was developed for production of highly desalinated water with a specific resistance of 15-20 MΩ·cm, based on a two-step electrodialysis combined with intermembrane filling of the desalination sections with a mixed layer of ion exchange resins KU-2 and AV-17. A preliminary sodium cationization had to be carried out in this process. It has been determined that filling the electrodialyzer sections with a mixed layer of the ion exchange resins increases the specific density of the current.

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